1. New Claims

Claims 1 to 8: cancelled.

Claim 9 (new):

An electro-mechanical load pull tuner comprises a test port and an idle port, a slotted transmission airline (slabline) connecting both ports, a mobile carriage movable parallel to the slabline, said carriage comprising a resonant coaxial probe sliding perpendicularly on the slabline; the center conductor of said resonant probe is an open-ended stab capacitively coupled to the central conductor of the slabline; said tuner comprises means for horizontal movement of said carriage and vertical movement of said open-ended stab inside said resonant probe.

Claim 10 (new):

An electro-mechanical tuner as in claim 9, in which the coaxial adjustable resonant probe is made of a conductive cylinder cavity and a center conductor in form of a conductive open-ended stab; said stab is mounted isolated inside said cylinder cavity using isolating dielectric washers; one end of said stab, away from the slabline, is open and its other end, closest to the center conductor of the slabline, is attached to a semi-cylindrical metallic foil, said foil being shaped and aligned such as to create effective capacitive coupling between said stab and the center conductor of the slabline; the external wall of the cylindrical cavity slides on the top surface of the slabline and makes perfect and continuous electrical contact; said center stab is movable inside the external cylinder perpendicularly to the center conductor of said slabline; all movements are implemented using translation gear and electrical stepper motors.

Claim 11 (new):

An electro-mechanical tuner as in claim 10, in which the position of the open-ended stab inside the cylindrical cavity of said resonant probe can be adjusted in such a way as to allow for variable capacitive coupling between said semi-cylindrical foil at the lower end of said stab and the central conductor of the airline and permits to control the amplitude of the microwave reflection factor created by the open-ended stab.

Claim 12 (new):

An electro-mechanical tuner as in claim 11, in which the length of the central stab inside said resonant probe is cut to appropriate length in order to create a quarter wavelength resonance at a given frequency, said frequency being typically, but not necessarily, a harmonic frequency multiple of an operation fundamental frequency.

Claim 13 (new):

An electro-mechanical tuner as in claim 12, in which the horizontal distance of said resonant probe assembly from the test port of said tuner can be remotely adjusted in order to allow controlling the phase of the reflection factor presented at the test port of said tuner.

Claim 14 (new):

An electro-mechanical tuner as in claim 13, which includes up to three independent sections, each said section comprising one resonant probe and associated motion control which allows horizontal movement of said probe and vertical movement of said stub inside the resonant probe, the central stab of each probe being cut to appropriate length in order to create a quarter wavelength resonance at another frequency, said resonance frequencies being typically, but not necessarily, harmonic frequencies multiples of a fundamental frequency.

Claim 15 (new):

An electro-mechanical tuner as in claim 14, where remote digital electrical control of the horizontal and vertical position of the resonant probes is implemented using a control computer operating appropriate control software and electronic means for controlling the positions of stepper motors connected to appropriate gear, which moves the tuner carriages horizontally along the slabline and the central stabs inside the resonant probes perpendicularly to the slabline.

Claim 16 (new):

An electro-mechanical tuner, comprising a slotted airline, a test port and an idle port is divided in to three sections, each section comprising a mobile carriage, which comprises a resonant probe, inside of which there is a central open-ended stub, which is capacitively coupled with the central conductor of said airline, said tuner is calibrated by measuring scattering parameters (S-parameters) between the test and idle ports at a given frequency (fo) and its two harmonics (2fo and 3fo), as a function of the horizontal and vertical position of each resonant probe, using a calibrated vector network analyzer (VNA), and saved in a calibration data file; said calibration includes five steps, step 1 consisting of measuring S-parameters of the tuner as a function of the position of probe 1, probes 2 and 3 being initialized, step 2 consisting of measuring S-parameters of the tuner as a function of the position of probe 2, probes 1 and 3 being initialized, step 3 consisting of measuring S-parameters of the tuner as a function of the position of probe 3, probes 1 and 2 being initialized, step 4 consisting of cascading the S-parameters measured in steps 2 and 3 with the inverse S-parameters of the tuner, measured when all probes are initialized, and step 5 consisting of saving the S-parameters collected and calculated in steps 1 to 4 in a total of 9 calibration data files, one for each of 3 probes and each of 3 harmonic frequencies.